About the CMOM Program Self Assessment Checklist

Introduction

A sanitary sewer collection system is a vital element of any community's infrastructure and a critical component of the wastewater treatment process. The nation's sanitary sewer infrastructure has been built over the last 100 years or more using a variety of materials, design standards, installation techniques, and maintenance practices. As this valuable infrastructure ages, the importance of preventive and predictive maintenance increases.

What is CMOM?

CMOM stands for "capacity, management, operations, and maintenance." It is a flexible, dynamic framework for municipalities to identify and incorporate widely-accepted wastewater industry practices to:

- Better manage, operate, and maintain collection systems
- Investigate capacity constrained areas of the collection system
- Respond to sanitary sewer overflow (SSO) events

The CMOM approach helps municipal wastewater utility operators provide a high level of service to customers and reduce regulatory noncompliance. CMOM can help utilities optimize use of human and material resources by shifting maintenance activities from "reactive" to "predictive"–often leading to cost savings through avoided overtime, emergency construction costs, increased insurance premiums, and the possibility of lawsuits. CMOM information and documentation can also help improve communications with the public, other municipal works and regional planning organizations, and regulators.

In CMOM planning, the utility selects performance goal targets, and designs CMOM activities to meet the goals. The CMOM planning framework covers operation and maintenance (O&M) planning, capacity assessment and assurance, capital improvement planning, and financial management planning. Information collection and management practices are used to track how well each CMOM activity is meeting the performance goals, and whether overall system efficiency is improving. On an ongoing basis, activities are reviewed and adjusted to better meet the performance goals. As the CMOM program progresses, performance goals can change. For instance, an initial goal may be to develop a geographic information system (GIS) of the system. Once the GIS is complete, a new goal might be to use the GIS to track emergency calls and use the information to improve maintenance planning.

An important component of a successful CMOM program is to periodically collect information on current systems and activities and develop a "snapshot-in-time" analysis. From this analysis, the utility establishes its performance goals and plans its CMOM program activities.

Additional information describing CMOM can be found at: www.epa.gov/npdes/sso or www.epa.gov/region4/water/wpeb/pdfs/self-audit_review2-3.pdf.

About this Checklist (Continued)

What is the purpose of the CMOM program checklist?

This document is a screening-level tool that can help utilities evaluate CMOM programs and identify general areas of strength and weakness. Completing this CMOM assessment will allow the utility to flag CMOM program areas that need improvement and establish priorities for additional, more detailed assessments. In addition, the checklist will allow the utility to compare annual performance (e.g., percent of employees meeting training standards).

This document is not intended to be all-inclusive. It addresses the types of practices EPA believes should be considered by most utilities when implementing a CMOM program. However, the ways in which utilities use the information gathered through the checklist will depend on the complexity and site-specific issues facing individual collection systems. When reviewing the questions, utilities should use their judgment to determine if the question is reasonable for their collection system size and design.

How do I use this checklist?

The questions on the checklist will request answers in three different formats:

- Check yes, no, or not applicable (NA),
- Fill in the blank, and
- Check all that apply.

At the end of each section, additional space is provided to allow for comments on or explanations of the answers recorded (information that will be useful to the utility in follow-on planning). Each utility should make an effort to answer all the questions that are applicable to its system. If a particular question takes a significant amount of time to answer, this could be an indication of an area of weakness. Utilities should plan to invest approximately one day to complete the checklist.

This document is designed to help utilities perform an initial evaluation of CMOM activities. **It is not intended to serve as an absolute indicator of a successful CMOM program, nor will all of the questions apply to every utility.** By working through these questions, utilities will be able to identify strengths and areas for improvements in their CMOM programs. If a utility has a significant number of "no" answers or very few items selected in the checklist, this could indicate an area of weakness. The utility manager then can make a more detailed evaluation, including identifying specific actions needed to address areas for improvement.

General Information

CHECKLIST COMPLETED BY:

Tony Conn
Name

Date 12-30-2013

630-420-6137
Daytime Telephone Number

UTILITY CONTACT INFORMATION

Utility Name City of Naperville Department of Public Utilities - Water

LOCATION

1200 W. Ogden Ave
Street Address

Street Address (continued)

Naperville | IL | 60563
City | State | Zip

STAFF

Tony Conn
Name

Collection and Pumping Supervisor
Title

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Phone (630) 305 - 5537 Fax (630) 420 - 4119

PERMITTED TREATMENT & COLLECTION FACILIITES

NPDES or STATE PERMIT #	PERMITTEE/CO-PERMITTEE/JURISDICTIONS	PERMIT COVERAGE: WWTP Effluent	Collection System	Wet-Weather Facility
IL0034061		■	■	■
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐
		☐	☐	☐

Collection System Description

SYSTEM INVENTORY

Treatment Facilities

1 NUMBER — # of Treatment facilities

WWTP design capacity: 57.13 MGD

Average daily flow: 18.31 MGD

Average dry weather fow: 15.71 MGD

Access & Maintenance

Manholes: 13,255 NUMBER

Number of air vacuum relief valves: 27 NUMBER

Conveyance & Pumping

	Gravity Sewers	Force Mains	Pump Stations
Pipes and pumps Length/quantity	534.09 MILES	8.29 MILES	22 NUMBER
Age of system 0 - 25 years old	41 % PERCENT	59 % PERCENT	59 % NUMBER
26 - 50 years old	49 % PERCENT	40 % PERCENT	32 % NUMBER
51 - 75 years old	7 % PERCENT	0 % PERCENT	9 % NUMBER
>76 years old	3 % PERCENT	1 % PERCENT	0 % NUMBER

Number of inverted siphons: 8

Number of Divertables: 12

SERVICE AREA CHARACTERISTICS

Service area: 26,447 ACRES

Service population: 143,684 PEOPLE

Annual precipitation: 27 INCHES

Number of Service Connections

Residential		Commercial		Industrial		TOTAL
39,935 NUMBER	+	1,810 NUMBER	+	22 NUMBER	=	41,767 NUMBER

Collection system service lateral responsibility *(check one)*

- ☐ At main line connection only
- ☐ From main line to property line or easement/cleanout
- ☐ Beyond property line/clean out
- ■ Other: See Attached Ordinance

Combined Sewer Systems

What percent of sewer system is served by combined sewers (i.e., sanitary sewage and storm water in the same pipe)? 0 % PERCENT

Collection System Description

	Gravity Sewers	Force Mains
PIPE DIAMETER		
8 inches or less	74 % PERCENT	33 % PERCENT
9 - 18 inches	19 % PERCENT	25 % PERCENT
19 - 36 inches	4 % PERCENT	42 % PERCENT
>36 inches	3 % PERCENT	0 % PERCENT
PIPE MATERIALS		
Prestressed concrete cylinder pipe (PCCP)	% PERCENT	% PERCENT
High density polyethylene (HDPE)	% PERCENT	% PERCENT
Reinforced concrete pipe (RCP)	% PERCENT	% PERCENT
Polyvinyl chloride (PVC)	% PERCENT	N/A PERCENT
Vitrified clay pipe (VCP)	% PERCENT	N/A PERCENT
Ductile iron	% PERCENT	% PERCENT
Non-reinforced concrete pipe	% PERCENT	% PERCENT
Asbestos cement pipe	% PERCENT	% PERCENT
Cast iron	% PERCENT	% PERCENT
Brick	% PERCENT	% PERCENT
Fiberglass	% PERCENT	% PERCENT
Other (*Explain*) See Chart	% PERCENT	% PERCENT

City of Naperville
Department of Public Utilites - Water and Wastewater
Pipe Material 2013

PIPE MATERIAL	GRAVITY MAINS	FORCE MAINS
Prestressed concrete cylinder pipe (PCCP)	0%	0%
High density polyethylene (HDPE)	0%	1%
Reinforced conrete pipe (RCP)	3%	0%
Polyvinyl chloride (PVC)	24%	8%
Vitrified clay pipe (VCP)	51%	0%
Ductile iron	3%	71%
Non- reinforeced concrete pipe	0%	0%
Asbestos cement pipe	0%	0%
Cast Iron	0%	20%
Brick	0%	0%
Fiberglass	0%	0%
Cement ACP	0%	0%
Concrete (CP)	1%	0%
Extra strong vitrified clay pipe (ESVCP)	0%	0%
Truss Plastic	1%	0%
Truss	1%	0%
RCSP	0%	0%
Cured in place pipe (CIPP)	16%	0%
Total	100%	100%

Engineering Design (ED)

ED-01	Is there a document which includes design criteria and standard construction details? City spec & design doc. both on line	☑ YES	☐ NO
ED-02	Is there a document that describes the procedures that the utility follows in construction design review? Same as above	☑ YES	☐ NO
ED-03	Are WWTP and O&M staff involved in the design review process?	☑ YES	☐ NO
ED-04	Is there a procedure for testing and inspecting new or rehabilitated system elements both during and after the construction is completed?	☑ YES	☐ NO
ED-05	Are construction sites supervised by qualified personnel (such as professional engineers or certified engineering technicians) to ascertain that the construction is taking place in accordance with the agreed upon plans and specifications?	☑ YES	☐ NO
ED-06	Are new manholes tested for inflow and infiltration? Vaccum test	☑ YES	☐ NO
ED-07	Are new gravity sewers checked using closed circuit TV inspection? Air tested and Mandrel tested	☐ YES	☑ NO
ED-08	Does the utility have documentation on private service lateral design and inspection standards?	☑ YES	☐ NO
ED-09	Does the utility attempt to standardize equipment and sewer system components?	☑ YES	☐ NO

Satellite Communities and Sewer Use Ordinance (SUO)

SUO-01	Does the utility receive flow from satellite communities? IF NO, GO TO PAGE 6 City of Warrenville	☑ YES	☐ NO
SUO-02	What is the total area from satellite communities that contribute flow to the collection system? *(Acres or square miles)*	1.42 sq. miles	
SUO-03	Does the utility require satellite communities to enter into an agreement? IF NO, GO TO QUESTION SUO-06.	☑ YES	☐ NO
SUO-04	Does the agreement include the requirements listed in the sewer use ordinance (SUO)?	☑ YES	☐ NO
SUO-05	Do the agreements have a date of termination and allow for renewal under different terms?	☑ YES	☐ NO
SUO-06	Does the utility maintain the legal authority to control the maximum flow introduced into the collection system from satellite communities?	☑ YES	☐ NO
SUO-07	Are standards, inspections, and approval for new connections clearly documented in a SUO?	☐ YES	☑ NO
SUO-08	Does the SUO require satellite communities to adopt the same industrial and commercial regulator discharge limits as the utility?	☐ YES	☑ NO
SUO-09	Does the SUO require satellite communities to adopt the same inspection and sampling schedules as required by the pretreatment ordinance?	☐ YES	☑ NO
SUO-10	Does the SUO require that satellite communities or the utility to issue control permits for significant industrial users?	☐ YES	☑ NO
SUO-11	Does the SUO contain provisions for addressing overstrength wastewater from satellite communities?	☑ YES	☐ NO

SUO-12 Does the SUO contain procedures for the following? *(Check all that apply)* N/A

☐ Inspection standards ☐ Pretreatment requirements ☐ Building/sewer permit issues

SUO-13 Does the SUO contain general prohibitions of the following materials? *(Check all that apply)*

☐ Fire and explosions hazards ☐ Corrosive materials ☐ Obstructive materials N/A

☐ Oils or petroleum ☐ Material which may cause interference at the wastewater treatment plant

SUO-14 Does the SUO contain procedures and enforcement actions for the following? *(Check all that apply)* N/A

☐ Fats, oils, and grease (FOG) ☐ Storm water connections to sanitary lines (downspouts)

☐ Infiltration and inflow ☐ Defects in service laterals located on private property

☐ Building structures over the sewer lines ☐ Sump pumps, air conditioner connections

Organizational Structure (OC)

OC-01	Is an organizational chart available that shows the overall personnel structure for the utility, including operation and maintenance staff?	☑ YES	☐ NO
OC- 02	Are up-to-date job descriptions available that delineate responsibilities and authority for each position?	☑ YES	☐ NO

OC-03 Are the following items discussed in the job descriptions? *(Check all that apply)*

- ■ Nature of work to be performed
- ■ Examples of the types of work
- ■ Minimum requirements for the position
- ■ List of licenses required for the position
- ■ Necessary special qualifications or certifications
- ■ Performance measures or promotion potential

OC-04	What percent of staff positions are currently vacant?	5 %
OC-05	On average how long do positions remain vacant? *(months)*	2
OC-06	What percent of utility work is contracted out? (See Below)	5 %

Sewer Rehab

SCADA Maintenance

Internal Communications (IC)

IC-01 Which of the following methods are used to communicate with utility staff? *(Check all that apply)*

■ Regular meetings ■ Bulletin boards ■ E-mail ■ Other (walkie talkie/pager) Cell Phones

IC-02 How often are staff meetings held? *(e.g., Daily, Weekly, Monthly, etc.)* Daily

IC-03 Are incentives offered to employees for performance improvements? ☑ YES ☐ NO

IC-04 Does the utility have an "Employee of the Month/Quarter/Year" program? Month ☑ YES ☐ NO

IC-05 How often are performance reviews conducted? *(e.g. Semi-annually, Annually, etc.)* See Below

IC-06 Does the utility regularly communicate/coordinate with other municipal departments? ☑ YES ☐ NO

Mid year reviews in November

Annual reviews in February

Budgeting (BUD)

BUD-01	What is the average annual fee for residential users? Wastewater only 8,000 gallons used	$339.00
BUD-02	How often are user charges evaluated and adjusted? *(e.g. annually, biannually, etc.)*	Annually
BUD-03	Are utility-generated funds used for non-utility programs?	YES ☐ NO ☑
BUD-04	Are costs for collection system operation and maintenance (O&M) separated from other utility services such as water, storm water, and treatment plants? IF NO, GO TO QUESTION BUD-07.	YES ☑ NO ☐
BUD-05	What is your average annual (O&M) budget?	$2,914,000
BUD-06	What percentage of the utility's overall budget is allocated to maintenance of the collection system?	80 %
BUD-07	Does the utility have a Capital Improvement Plan (CIP) that provides for system repairs/replacements on a prioritized basis?	YES ☑ NO ☐
BUD-08	What is your average annual CIP budget?	$2,500,000

BUD-09 What percentage of the maintenance budget is allotted to the following maintenance?

Predictive maintenance (tracking design, life span, and scheduled parts replacements)	20 %
Preventive maintenance (identifying and fixing system weaknesses which, if left unaddressed, could lead to overflows)	65 %
Corrective maintenance (fixing system components that are functioning but not at 100% capacity/efficiency; for example partially blocked lines)	5 %
Emergency maintenance (reactive maintenance, overflows, equipment breakdowns)	10 %

BUD-10	Does the utility have a budgeted program for the replacement of under-capacity pipes?	YES ☑ NO ☐
BUD-11	Does the utility have a budgeted program for the replacement of over-capacity pipes?	YES ☑ NO ☐

Training (TR)

TR-01	Does the utility have a formal job knowledge, skills, and abilities (KSA) training program?	YES	☑ NO
TR-02	Does the training program address the fundamental mission, goals, and policies of the utility?	☑ YES	NO
TR-03	Does the utility have mandatory training requirements identified for key employees?	☑ YES	NO

TR-04	What percentage of employees met or exceeded their annual training goals during the past year?	100 %

TR-05 Does the utility provide training in the following areas? *(Check all that apply)*

■ Safety	■ Traffic control	☐ Public relations
■ Routine line maintenance	☐ Record keeping	■ SSO/Emergency response
■ Confined space entry	■ Electrical and instrumentation	■ Pump station operations and maintenance
■ Other	■ Pipe repair	■ CCTV and trench/shoring
	■ CIPP	

TR-06	Are operator and maintenance certification programs used? IF NO, GO TO QUESTION TR-08	YES	☑ NO
TR-07	Are operator and maintenance certification programs required?	YES	☑ NO
TR-08	Is on-the-job training progress and performance measured?	YES	☑ NO

TR-09 Which of the following methods are used to assess the effectiveness of the training? *(Check all that apply)*

■ None ☐ Periodic testing ☐ Drills ☐ Demonstrations

TR-10 What percentage of the training offered by the utility is in the form of the following?

Manufacturer training 10 %	In-house classroom training 70 %
On-the-job training 10 %	Industry-wide training 10 %

Safety (SAF)

SAF-01	Does the utility have a written safety policy?	☑ YES	☐ NO
SAF-02	How often are safety procedures reviewed and revised? *(e.g. Semiannually, Annually, etc.)* Annually as needed	☑ YES	☐ NO
SAF-03	Does the utility have a safety committee?	☑ YES	☐ NO
SAF-04	Are regular safety meetings held with the utility employees?	☑ YES	☐ NO
SAF-05	Does the utility have a safety training program?	☑ YES	☐ NO
SAF-06	Are records of employee safety training kept up to date?	☑ YES	☐ NO

SAF-07 Does the utility have written procedures for the following? *(Check all that apply)*

- ■ Lockout/tagout
- ■ Material safety date sheets (MSDS)
- ■ Chemical handling
- ■ Confined spaces permit program
- ■ Trenching and excavations safety
- ■ Biological hazards in wastewater
- ■ Traffic control and work site safety
- ■ Electrical and mechanical systems
- ■ Pneumatic and hydraulic systems safety

SAF-08 What is your agency's lost-time injury rate? 0 % or 0 hours

SAF-09 Are the following equipment items available and in adequate supply? *(Check all that apply)*

- ■ Rubber/disposable gloves
- ■ Confined space ventilation equipment
- ■ Hard hats, safety glasses, rubber boots
- ■ Antibacterial soap and first aid kit
- ■ Tripods or non-entry rescue equipment
- ■ Fire extinguishers
- ■ Equipment to enter manholes
- ■ Portable crane/hoist
- ■ Atmospheric testing equipment and gas detectors
- ■ Oxygen sensors
- ■ H_2S Monitors
- ■ Full body harness
- ■ Protective clothing
- ■ Traffic/public access control equipment
- ■ 5-minute escape breathing devices
- ■ Life preservers for lagoons
- ■ Safety buoy at activated sludge plants
- ■ Fiberglass or wooden ladders for electrical work
- ■ Respirators and/or self contained breathing apparatus
- ■ Methane gas or optical vector (OVA) analyzer
- ■ Lower explosion limit (LEL) metering

SAF-10	Are safety monitors clearly identified?	☑ YES	☐ NO

Customer Service (CS)

CS-01 Does the utility have a customer service and public relations program? IF NO GO TO QUESTION CS-03 ☑ YES ☐ NO

CS-02 Does the customer service program include giving formal presentations on the wastewater field to the following? *(Check all that apply)*

- ☐ Schools and universities
- ☐ Local officials
- ☐ Media
- ☐ Building Inspector(s)
- ☐ Community gatherings
- ☐ Businesses
- ■ Citizens
- ■ Public utility officials

CS-03 Are employees of the utility specifically trained in customer service? ☑ YES ☐ NO

CS-04 Are there sample correspondence, Q/A's, or "scripts" to help guide staff through written or oral responses to customers? ☑ YES ☐ NO

CS-05 What methods are used to notify the public of major construction or maintenance work? *(Check all that apply)*

- ■ Door hangers
- ■ Newspaper
- ■ Fliers
- ■ Signs
- ■ Other
- ☐ None
- ■ Public radio or T.V. announcements
- ■ Internet

CS-06 Is a homeowner notified prior to construction that his/her property may be affected? ☑ YES ☐ NO

CS-07 Do you provide information to residents on cleanup and safety procedures following basement backups and overflows from manholes when they occur? ☑ YES ☐ NO

CS-08 Does the utility have a customer service evaluation program to obtain feedback from the community? ☑ YES ☐ NO

CS-09 Do customer service records include the following information? *(Check all that apply)*

- ■ Personnel who received the complaint or request
- ■ Name, address, and telephone number of customer
- ■ Nature of the complaint or request
- ■ Location of the problem
- ■ To whom the follow-up action was assigned
- ■ Date the follow up action was assigned
- ■ Date of the complaint or request
- ■ Cause of the problem
- ■ Date the complaint or request was resolved
- ■ Feedback to customer
- ■ Total days to end the problem

CS-10 Does the utility have a goal for how quickly customer complaints (or ermergency calls) are resolved? IF NO, GO TO THE NEXT PAGE. Customer service call goal respond is 1 hour ☑ YES ☐ NO

CS-11 What percentage of customer complaints (or emergency calls) are resolved within the timeline goals? 100 %

Equipment and Collection System Maintenance (ESM)

ESM-01 Is a maintenance card or record kept for each piece of mechanical equipment within the collection system? IF NO, GO TO QUESTION ESM-03. Cityworks — ☑ YES ☐ NO

ESM-02 Do equipment maintenance records include the following information? *(Check all that apply)*

- ■ Maintenance recommendations
- ■ Maintenance schedule
- ■ Instructions on conducting the specific maintenance activity
- ■ A record of maintenance on the equipment to date
- ■ Other observations on the equipment

ESM-03 Are dated tags used to show out-of-service equipment? ☑ YES ☐ NO

ESM-04 Is there an established system for prioritizing equipment maintenance needs? ☑ YES ☐ NO

ESM-05 What percent of repair funds are spent on emergency repairs? 10 %

ESM-06 Are corrective repair work orders backlogged more than six months? ☐ YES ☑ NO

ESM-07 Do collection system personnel coordinate with state, county, and local personnel on repairs, before the street is paved? If needed — ☑ YES ☐ NO

Equipment Parts Inventory (EPI)

EPI-01	Have critical spare parts been identified?	☑ YES	☐ NO
EPI-02	Are adequate supplies on hand to allow for two point repairs in any part of the system?	☑ YES	☐ NO
EPI-03	Is there a parts standardization policy in place?	☑ YES	☐ NO
EPI-04	Does the utility have a central location for storing spare parts?	☑ YES	☐ NO
EPI-05	Does the utility maintain a stock of spare parts on its maintenance vehicles?	☑ YES	☐ NO
EPI-06	Does the utility have a system in place to track and maintain an accurate inventory of spare parts?	☑ YES	☐ NO
EPI-07	For those parts which are not kept in inventory, does the utility have a readily available source or supplier?	☑ YES	☐ NO

Management Information System (MIS)

MIS-01 Does the utility have a management information system (MIS) in place for tracking maintenance activities? *(Either electronic or good paper files)* IF NO, GO TO PAGE 15. Cityworks ☑ YES ☐ NO

MIS-02 Are the MIS records maintained for a period of at least three years? ☑ YES ☐ NO

MIS-03 Is the MIS able to distinguish activities taken in response to an overflow event? ☑ YES ☐ NO

MIS-04 Are there written instructions for managing and tracking the following information? *(Check all that apply)*

- ■ Complaint work orders
- ■ Scheduled work orders
- ■ Customer service
- ■ Scheduled preventive maintenance
- ■ Scheduled inspections
- ■ Sewer system inventory
- ■ Safety incidents
- ■ Scheduled monitoring/ sampling
- ■ Compliance/overflow tracking
- ■ Equipment/tools tracking
- ■ Parts inventory

MIS-05 Do the written instructions for tracking procedures include the following information? *(Check all that apply)*

- ■ Accessing data and information
- ■ Instructions for using the tracking system
- ■ Updating the MIS
- ■ Developing and printing reports

MIS-06 How often is the management information system updated? *(Check one)*

- ■ Immediately
- ☐ Monthly
- ☐ Within one week of the "incident"
- ☐ As time permits

System Mapping (MAP)

MAP-01 Are "as built" plans (record drawings) or maps available for use by field crews in the office and in the field? ☑ YES ☐ NO

MAP-02 Is there a procedure for field crews to record changes or inaccuracies in the maps and update the mapping system? ☑ YES ☐ NO

MAP-03 Do the maps show the date the map was drafted and the date of the last revision? ☑ YES ☐ NO

MAP-04 Do the sewer line maps include the following? *(Check all that apply)*

- ■ Scale
- ■ North arrow
- ■ Date the map was drafted
- ■ Date of last revision
- ■ Service area boundaries
- ■ Property lines
- ■ Other landmarks (Roads, water bodies, etc.)
- ■ Manhole and other access points
- ■ Location of building laterals
- ■ Street names
- ■ SSOs occurrences/CSOs outfalls
- ■ Flow monitors
- ■ Force mains
- ■ Pump stations
- ■ Lined sewers
- ■ Main, trunk, and interceptor sewers
- ■ Easement lines and dimensions
- ■ Pipe material
- ■ Pipe diameter
- ■ Installation date
- ■ Slope
- ■ Manhole rim elevation
- ■ Manhole coordinates
- ■ Manhole invert elevation
- ■ Distance between manholes

All is avaliable if needed thru cityworks or onbase

MAP-05 Are the following sewer attributes recorded? *(Check all that apply)*

- ■ Size
- ■ Shape
- ■ Invert elevation
- ■ Material
- ■ Separate/combined sewer
- ■ Installation Date

MAP-06 Are the following manhole attributes recorded? *(Check all that apply)*

- ■ Shape
- ■ Type (e.g., precast, cast in place, etc.)
- ■ Depth
- ■ Age
- ■ Material

MAP-07 Is there a systematic numbering and identification method/system established to identify sewer system manhole, sewer lines, and other items (pump stations, etc.)? ☑ YES ☐ NO

Internal TV Inspection (TVI)

TVI-01 Does the utility have a standardized pipeline condition assessment program? ☑ YES ☐ NO

TVI-02 Is internal TV inspection used to perform condition assessment? IF NO, GO TO PAGE 17. ☐ YES ☐ NO

TVI-03 Are there written operation procedures and guidelines for the internal TV inspection program? ☑ YES ☐ NO

TVI-04 Do the internal TV record logs include the following? *(Check all that apply)*

- ■ Pipe size, type, length, and joint spacing
- ■ Distance recorded by internal TV
- ■ Results of the internal TV inspection (including a structural rating)
- ■ Internal TV operator name
- ■ Cleanliness of the line
- ■ Location and identification of line being televised by manholes

TVI-05 Is a rating system used to determine the severity of the defects found during the inspection process? ☑ YES ☐ NO

TVI-06 Is there documentation explaining the codes used for internal TV results reporting? ☑ YES ☐ NO

PACP

TVI-07 Approximately what percent of the total defects determined by TV inspection during the past 5 years were the following?

Failed coatings or linings	4 %	Line deflection	5 %
House connection leaks	15 %	Joint separation	4 %
Illegal connections	1 %	Crushed pipes	5 %
Pipe corrosion (H_2S)	5 %	Collapsed pipes	1 %
Fats, oil, and grease	10 %	Offset joints	5 %
Broken pipes	10 %	Root intrusions	15 %
Debris	10 %	Minor cracks	5 %
Other	5 %		

TVI-08 Are main line and lateral repairs checked by internal TV inspection after the repair(s) have been made? ☑ YES ☐ NO

Sewer Cleaning (CLN)

CLN-01	What is the system cleaning frequency? (the entire system is cleaned every "X" years)	5
CLN-02	What is the utility's plan for system cleaning (% or frequency in years)?	100%
CLN-03	What percent of the sewer lines are cleaned, even high/repeat cleaning trouble spots, during the past year?	25 %
CLN-04	Is there a program to identify sewer line segments, with chronic problems, that should be cleaned on a more frequent schedule?	☑ YES ☐ NO
CLN-05	Does the utility have a root control program?	☑ YES ☐ NO
CLN-06	Does the utility have a fats, oils, and grease (FOG) program?	☑ YES ☐ NO
CLN-07	What is the average number of stoppages experienced per mile of sewer pipe per year?	1 OR LESS %

CLN-08 Has the number of stoppages increased, decreased, or stayed the same over the past 5 years?

☐ Increased ☐ Decreased ■ Stayed the same

CLN-09 Are stoppages plotted on maps and correlated with other data such as pipe size and material or location? ☑ YES ☐ NO

CLN-10 Do the sewer cleaning records include the following information? *(Check all that apply)*

■ Date and time	■ Method of cleaning	■ Identity of cleaning crew
■ Cause of stoppage	■ Location of stoppage or routine cleaning activity	■ Further actions necessary/initiated

CLN-11 If sewer cleaning is done by a contractor are videos taken of before and after cleaning? ☐ YES ☐ NO

Cleaning not done by contractor

Manhole Inspection and Assessment (MAN)

MAN-01 Does the utility have a routine manhole inspection and assessment program? IF NO, GO TO QUESTION MAN-06. ☑ YES ☐ NO

MAN-02 Are the results and observations from the routine manhole inspections recorded? ☑ YES ☐ NO

MAN-03 Does the utility have a goal for the number of manholes inspected annually? ☐ YES ☑ NO

MAN-04 How many manholes were inspected during the past year? 150

MAN-05 Do the records for manhole/pipe inspection include the following? *(Check all that apply)*

- ■ Conditions of the frame and cover
- ■ Evidence of surcharge
- ■ Offsets or misalignments
- ■ Atmospheric hazards measurements (especially hydrogen sulfide)
- ■ Details on the root cause of cracks or breaks in the manhole or pipe including blockages
- ■ Recording conditions of (corbel, walls, bench, trough, and pipe seals)
- ■ Presence of corrosion
- ■ If repair is necessary
- ■ Manhole identifying number/location
- ■ Wastewater flow characteristics (flowing freely or backed up)
- ■ Accumulations of grease, debris, or grit
- ■ Presence of infiltration, location, and estimated quantity
- ■ Inflow from manhole covers

MAN-06 Does the utility have a grouting program? As needed ☑ YES ☐ NO

Pump Stations (PS)

PS-01	Are Standard Operation Procedures (SOPs) and Standard Maintenance Procedures (SMPs) used for each pump station?	☑ YES	☐ NO
PS-02	Are there enough trained personnel to properly maintain all pump stations?	☑ YES	☐ NO
PS-03	Is there an emergency operating procedure for each pump station?	☑ YES	☐ NO
PS-04	Is there an alarm system to notify personnel of pump station failures and overflow?	☑ YES	☐ NO

PS-05	Percent of pump stations with back up power sources Onsite. Other 9% has hookups for portable generator	91 %

PS-06 Does the utility use the following methods when loss of power ocurs? *(Check all that apply)*

■ On-site electrical generators ■ Portable electric generators ☐ Alternate power source ■ Other Bypass pumping

■ Vacuum trucks to bypass pump station

PS-07	Is there a procedure for manipulating pump operations (manually or automatically) during wet weather to increase in-line storage of wet weather flows?	☑ YES	☐ NO
PS-08	Are wet well operating levels set to limit pump start/stops?	☑ YES	☐ NO
PS-09	Are the lead, lag, and backup pumps rotated regularly?	☑ YES	☐ NO
PS-10	Are operation logs maintained for all pump stations?	☑ YES	☐ NO
PS-11	Are the original manuals that contain the manufacturers recommended maintenance schedules for all pump station equipment easily available?	☑ YES	☐ NO
PS-12	On average, how often were pump stations inspected during the past year? Monthly	☑ YES	☐ NO
PS-13	Are records maintained for each inspection?	☑ YES	☐ NO

PS-14	Average annual labor hours spent on pump station inspection	2,808
PS-15	Percent of pump stations with pump capacity redundancy	100 %
PS-16	Percent of pump stations with dry weather capacity limitations	0 %
PS-17	Percent of pump stations with wet weather capacity limitations	80 %
PS-18	Percent of pump stations calibrated annually	100 %
PS-19	Percent of pump stations with permanent flow meters	30 %

Capacity Assessment (CA)

CA-01	Does the utility have a flow monitoring program?	☑ YES	☐ NO
CA-02	Does the utility have a comprenhensive capacity assessment and planning program?	☑ YES	☐ NO
CA-03	Are flows measured prior to allowing new connections?	☐ YES	☑ NO
CA-04	Do you have a tool (hydraulic model, spreadsheet, etc.) for assessing whether adequate capacity exists in the sewer system? IF NO, GO TO QUESTION CA-06.	☐ YES	☑ NO
CA-05	Does your capacity assessment tool produce results consistent with conditions observed in the system?	☐ YES	☐ NO

CA-06	What is the ratio of peak wet weather flow to average dry weather flow at the wastewater treatment plant?	N/A
CA-07	How many permanent flow meters are currently in the system? *(Include meters at pump stations and wastewater treatment plants)*	35
CA-08	How frequently are the flow meters checked? *(e.g. Daily, Weekly, Monthly, etc.)*	weekly

CA-09 Do the flow meter checks include the following? *(Check all that apply)*

- ■ Independent water level
- ■ Velocity reading
- ■ Downloading data
- ■ Checking the desiccant
- ■ Cleaning away debris
- ■ Battery condition

CA-10	Are records maintained for each inspection? IF NO, GO TO QUESTION CA-12.	☑ YES	☐ NO

CA-11 Do the flow monitoring records include the following? *(Check all that apply)*

- ■ Descriptive location of flow meter
- ■ Frequency of flow meter inspection
- ■ Type of flow meter
- ■ Frequency of flow meter calibration

CA-12	Does the utility maintain any rain gauges or have access to local rainfall data?	☑ YES	☐ NO
CA-13	Does the utility have any wet weather capacity problems?	☑ YES	☐ NO
CA-14	Are low points or flood-plain areas monitored during rain events?	☑ YES	☐ NO
CA-15	Does the utility have any dry weather capacity problems?	☐ YES	☑ NO
CA-16	Is flow monitoring used for billing purposes, capacity analysis, and/or inflow and infiltration investigations? All of the above	☑ YES	☐ NO

Tracking SSOs (TRK)

TRK-01	How many SSO events have been reported in the past 5 years?	6

TRK-02	What percent of the SSOs were less than 1,000 gallons in the past 5 years ?	20 %

TRK-03	Does the utility document and report all SSOs regardless of size?	☑ YES	☐ NO
TRK-04	Does the utility document basement backups?	☑ YES	☐ NO
TRK-05	Are there areas that experience frequent basement or street flooding?	☑ YES	☐ NO

TRK-06 Approximately what percent of SSOs discharges were from each of the following in the last 5 years?

Manholes	20 %	Main and trunk sewers	10 %	Structural bypasses	0 %
Pump stations	0 %	Lateral and branch sewers	0 %	Wet Weather Lagoons	70 %

TRK-07 Approximately what percent of SSOs discharges were caused by the following in the last 5 years?

Debris buildup	%	Root intrusion	%	Excessive infiltration and inflow	90 %
Collapsed pipe	%	Capacity limitations	%	Fats, oil, and grease	10 %
Vandalism	%				

TRK-07A What percentage of SSOs were released to:

Soil	10 %	Basements	20 %	Paved area	%
Surface water (rivers/lakes/streams)	70 %	Coastal, ocean, beaches	%		

TRK-07B For surface water releases, what percent are to areas that could affect:

Contact recreation (beaches, swimming, areas)	100 %	Drinking water sources	0 %
Shellfish growing areas	0 %		

TRK-08	How many chronic SSO locations are in the collection system?	0

TRK-09	Are pipes with chronic SSOs being monitored for sufficient capacity and/or structural condition?	☑ YES	☐ NO
TRK-10	Prior to collapse, are structurally deteriorating pipelines being monitored for renewal or replacement?	☑ YES	☐ NO

Overflow Emergency Response Plan (OERP)

OERP-01	Does the utility have a documented OERP available for utility staff to use? IF NO, GO TO QUESTION OERP-04.	☑ YES	☐ NO
OERP-02	How often is the OERP reviewed and updated? *(Annually, Biannually, etc.)*	Annually	
OERP-03	Are specific responsibilities detailed in the OERP for personnel who respond to emergencies?	☑ YES	☐ NO
OERP-04	Are staff continuously trained and drilled to respond to emergency situations?	☑ YES	☐ NO
OERP-05	Do work crews have immediate access to tools and equipment during emergencies?	☑ YES	☐ NO
OERP-06	Does the utility have standard procedures for notifying state agencies, local health departments, the NPDES authority, the public, and drinking water authorities of significant overflow events?	☑ YES	☐ NO
OERP-07	Does the procedure include a current list of the names, titles, phone numbers, and responsibilities of all personnel involved?	☑ YES	☐ NO
OERP-08	Does the utility have a public notification plan?	☑ YES	☐ NO
OERP-09	Does the utility have procedures to limit public access to and contact with areas affected with SSOs? *(Procedure can be delegated to another authority)*	☑ YES	☐ NO
OERP-10	Does the utility use containment techniques to protect the storm drainage systems?	☑ YES	☐ NO

OERP-11 Do the overflow records include the following information? *(Check all that apply)*

■ Date and time	■ Location	■ Any remediation efforts
■ Cause s)	■ How it was stopped	■ Estimated flow/volume discharged
■ Names of affected receiving water(s)		■ Duration of overflow

OERP-12	Does the utility have signage to keep public from effected area?	☑ YES	☐ NO

Smoke and Dye Testing (SDT)

SDT-01	Does the utility have a smoke testing program to identify sources of inflow and infiltration?	☑ YES	☐ NO
SDT-01A	Does the utility have a smoke testing program to identify sources of inflow and infiltration in illegal connectors?	☑ YES	☐ NO
SDT-01B	Does the utility have a smoke testing program to identify sources of inflow and infiltration in house laterals (private service laterals)?	☑ YES	☐ NO
SDT-02	Are there written procedures for the frequency and schedule of smoke testing?	☑ YES	☐ NO
SDT-03	Is there a documented procedure for isolating line segments?	☑ YES	☐ NO
SDT-04	Is there a documented procedure for notifying local residents that smoke testing will be conducted in their area?	☑ YES	☐ NO

All of the above only if needed

SDT-05	What is the guideline for the maximum amount of the line to be tested at one time? *(Feet or Miles)*	1,000 Feet
SDT-06	Are there guidelines for the weather conditions under which smoke testing should be conducted?	☐ YES ☑ NO
SDT-07	Does the utility have a goal for the percent of the system smoke tested each year?	☐ YES ☑ NO
SDT-08	What percent of the system has been smoke tested over the past year?	0 %
SDT-09	Do the written records contain location, address, and description of the smoking element that produced a positive result?	☑ YES ☐ NO
SDT-10	Does the utility have a dye testing program?	☑ YES ☐ NO
SDT-11	Are there written procedures for dye testing?	☑ YES ☐ NO
SDT-12	Does the utility have a goal for the percent of the system dye tested each year?	☐ YES ☑ NO
SDT-13	What percent of the main collection system has been dye tested over the past year?	0 %
SDT-14	Does the utility share smoke and dye testing equipment with another utility?	☐ YES ☑ NO

Hydrogen Sulfide Monitoring and Control (HSMC)

HSMC-01 How would you rate the systems vulnerability for hydrogen sulfide corrosion? *(Check only one)*

☐ Not a problem ■ Only in a few isolated areas ☐ A major problem

HSCM-02 Does the utility have a corrosion control program? ☑ YES ☐ NO

HSCM-03 Does the utility take hydrogen sulfide corrosion into consideration when designing new or replacement sewers? ☑ YES ☐ NO

HSCM-04 Does the utility have written procedures for the application of chemical dosages? ☐ YES ☑ NO

HSCM-05 Are the chemical dosages, dates, and locations documented? ☐ YES ☑ NO

HSCM-06 Does the utility document where odor is a continual problem in the system? ☑ YES ☐ NO

HSCM-07 Does the utility have a program in place for renewing or replacing severely corroded sewer lines to prevent collapse? ☑ YES ☐ NO

HSCM-08 Are the following methods used for hydrogen sulfide control? *(Check all that apply)*

☐ Aeration	☐ Chlorine	☐ Potassium permanganate
☐ Iron salts	☐ Sodium hydroxide	☐ Biofiltration
☐ Enzymes	☐ Hydrogen peroxide	■ Other
☐ Activated charcoal canisters		Replacement/ Rehab

HSCM-09 Does the system contain air relief valves at the high points of the force main system? ☑ YES ☐ NO

HSCM-10 How often are the valves maintained and inspected? *(Weekly, Monthly, etc.)* Annually

HSMC-11 Does the utility enforce pretreatment requirements? ☑ YES ☐ NO

Infrastructure Security

Although outside the scope of a CMOM program, municipal wastewater utilities should also consider security vulnerabilities. To reduce the threat of both intentional and natural disasters, the utility should take steps to implement appropriate countermeasures and develop or update emergency response plans.